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# BIOLOGICAL EVALUATION OF SOUTHERN PINE BEETLE ON THE CANEY CREEK WILDERNESS AREA OUACHITA NATIONAL FOREST

by

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*Abstract*

*A biological evaluation was conducted on a 241 tree SPB spot located on the Caney Creek Wilderness Area, Ouachita National Forest during April, 1982. SPB activity was determined to be at such a low level that Forest Pest Management recommends that no control efforts be undertaken at this time.*

## INTRODUCTION

On April 21, 1982, a biological evaluation was conducted on the Caney Creek Wilderness Area on the Ouachita National Forest to determine the status of the southern pine beetle (Dendroctonus frontalis Zimm.) populations within the designated area. An insect and disease detection flight conducted in February by the Forest Pest Management Aerial Survey Team from Doraville, GA, located a large southern pine beetle (SPB) spot (estimated 300 red or fading trees) within the wilderness boundaries (Dull, 1982). Entomologists from the State & Private Forestry, Forest Pest Management (FPM), Alexandria, LA, Field Office conducted the evaluation.

The Caney Creek Wilderness Area is located on the Mena Ranger District south of Mena, AR. It consists of 14,443 acres of pine-hardwood forest, with shortleaf pine being the predominant pine species. The major recreational use in the area is hiking and backpacking along the Caney Creek Trail.

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## METHOD OF EVALUATION

The SPB spot had been previously located by ranger district personnel. During the ground check procedure, the number of SPB infested and vacated trees, basal area, tree diameter, height, and age were recorded.

## RESULTS AND DISCUSSION

The SPB infestation was located on a ridge approximately one-eighth mile north of the Caney Creek Trail (figure 1). The ground check revealed that the spot was still actively infested, but there were no newly attacked trees. The results are summarized in table 1. The spot was probably initiated last summer and spread from east to west along the ridge killing approximately 250 overmature shortleaf pine sawtimber sized trees. The 14 trees currently infested were probably attacked last fall before the onset of cold weather. Apparently no additional trees have been infested due to the cold and wet weather conditions experienced in the area this spring.

The pine basal area measured one chain in front of the active head of the SPB infestation was 110 square feet. Therefore, satisfactory quantity and quality host material is available for spot spread. However, because only low numbers of SPB larvae and pupae were found within the bark of the actively infested trees, FPM feels that the likelihood of spot spread or proliferation is negligible. Research has shown that small beetle spots of this type tend to go inactive and, therefore, have a low priority for control (Swain and Remion, 1981). Also, the majority of the vacated trees exhibited signs of extensive woodpecker predation. Because of the thin bark on shortleaf pine, the woodpeckers removed approximately 75% of the bark from the bole of the tree and could have had a significant impact on the survival of the overwintering SPB population (Kroll et al., 1980).

The resource management objective of this area is to maintain its present wilderness characteristics. FPM feels that this could be best accomplished by taking no action. The infestation is so inaccessible that attempting control by either salvage, cut-and-leave, or chemicals would require considerable effort and expense and could be disruptive to the forest environment. Additionally, there is only a minimal chance that this infestation will spread to non-wilderness land as it is located in the center of the area and can only move west along the ridge as it is bordered by hardwoods on the side slopes. Finally, the standing dead trees are not visible from the trail so there is little or no impact on the visual quality of the area. Appendix A outlines current FPM control and prevention techniques.

SPB activity in Arkansas has been endemic since the late 1970's. The detection of 8 multiple tree SPB spots on the Caddo and Mena Ranger Districts in February is the first report of activity in some time. While

Figure 1. Location of southern pine beetle activity on the Caney Creek Wilderness Area, Ouachita National Forest

Wilderness Boundary

SPB spot location

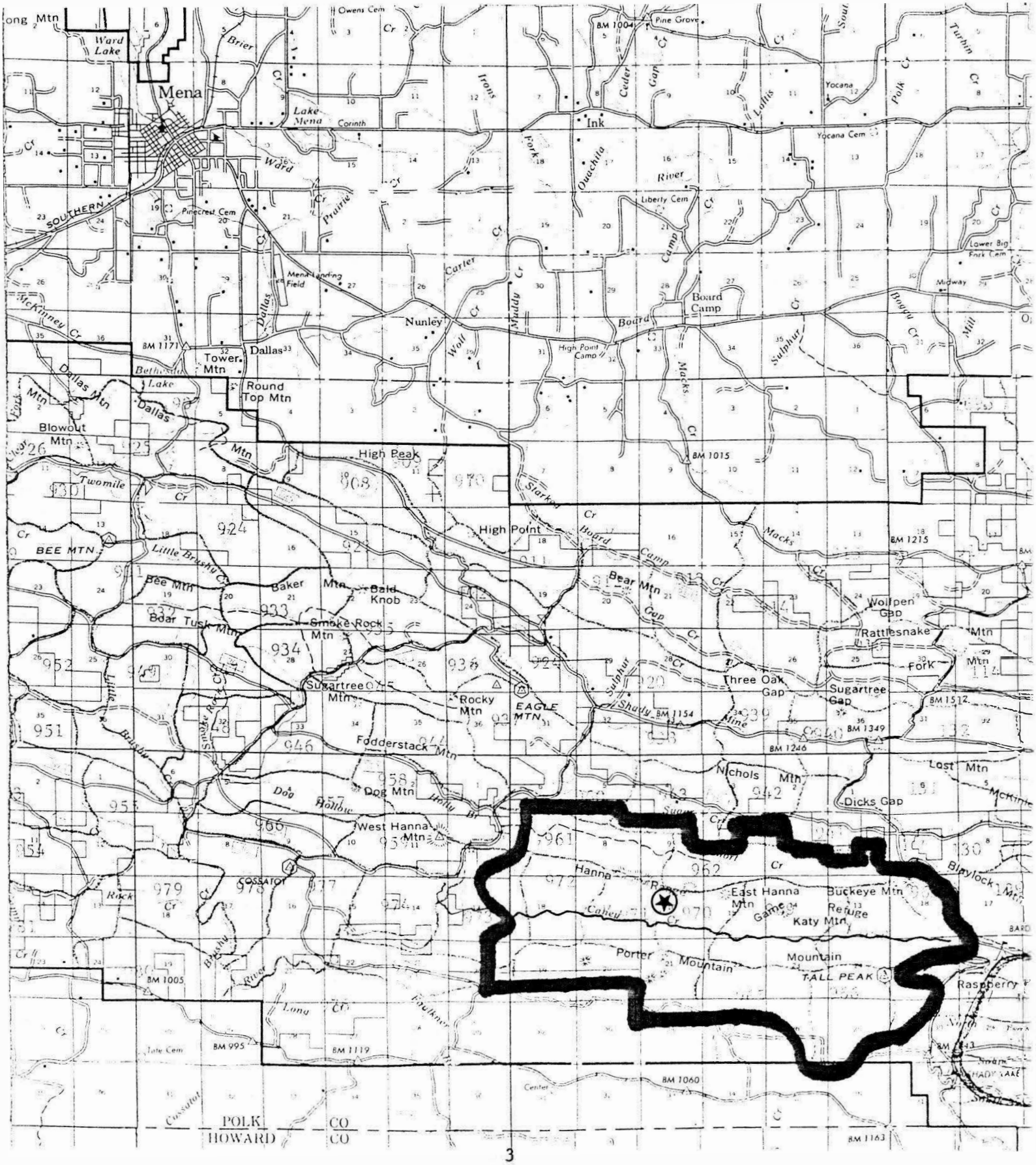

Table 1. Summary of SPB ground check data for Caney Creek Wilderness Area, April 1982.

| Total No. Trees | No. Vacated Trees | | No. Infested Trees | | | | Basal Area | | Age | Ht.(ft) | Tree DBH | Site Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Red | Total | Green | Red | Black | Pine | Hardwood | | | | |
| 241 | 227 | 5 | 14 | 0 | 12 | 2 | 110 | 40 | 75 | 65 | 15.2 | 50 |

this does not indicate that another epidemic is underway, the potential for large timber losses is present. Tracts of old growth high density shortleaf pine timber located within the Caney Creek Wilderness Area are susceptible to SPB attack. Other infestations within these boundaries could eventually spread to managed stands on National Forest or private land. Therefore, FPM feels that it is necessary to continue surveillance and has scheduled a follow-up insect and disease detection flight for late June. At this time any new infestations should be easily seen and a more accurate determination of SPB population build-up can be made. Communication between the ranger district, the Supervisor's Office, and FPM should continue in order to evaluate any changes in SPB population.

## REFERENCES

Belanger, R. P., and B. F. Malac. 1980. Silviculture can reduce losses from the southern pine beetle. U. S. Dep. Agric. For. Serv., Agric. Handb. 576, 17 p.

Billings, R. F., and H. A. Pase, III. 1979. A field guide for ground checking southern pine beetle spots. U. S. Dep. Agric. For. Serv., Agric. Handb. 558, 19 p.

Dull, C. W. 1982. Aerial detection survey of forest insect and disease activity, Ouachita National Forest, Arkansas. USDA For. Serv. Rep. No. SA 82-3-28, 3 p. USDA For. Serv., For. Pest Manage., Doraville, GA.

Kroll, J. C., R. N. Conner, and R. R. Fleet. 1980. Woodpeckers and the southern pine beetle. U. S. Dep. Agric. For. Serv., Agric. Handb. 564, 23 p.

Swain, K. M., and M. C. Remion. 1981. Direct control methods for the southern pine beetle. U. S. Dep. Agric. For. Serv., Agric. Handb. 575, 15 p.

## APPENDIX A

## ALTERNATIVES FOR SOUTHERN PINE BEETLE CONTROL

Five alternatives are recommended for southern pine beetle control. The following discussion briefly outlines these alternatives. For a more detailed description on conducting control procedures refer to the southern pine beetle handbook series (Agric. Handb. Nos. 558, 560, 575, 576).

Alternative 1. Remove trees through salvage.

Salvage is the method most often used for stopping the growth of existing spots. This strategy involves removing a buffer strip of noninfested trees, all green infested and red infested trees, and if desired, the trees already killed by the beetles. The buffer strip should surround the recently attacked trees. It should be 40 to 70 feet wide for most active spots, while a 100-ft strip (and occasionally larger) may be needed for large, rapidly expanding spots. As a rule, the width of the buffer should not exceed the average height of the trees in the spot. The SPB spot should be carefully surveyed and all trees to be removed should be marked.

To implement this alternative the buffer strip should be cut first. All infested trees should be cut next. Vacated trees are cut last and are removed only for utilization purposes. All trees should be felled toward the center of the spot. The reason for this is to keep infested trees as far away from noninfested trees as possible. This reduces the chance of beetles killing additional trees.

Alternative 2. Piling and burning.

Unmerchantable or inaccessible southern pine beetle infestations can be suppressed by cutting, piling, and thoroughly charring the bark of infested trees. The entire bark surface must be thoroughly charred to insure effective control. The order of priority for cutting, piling, and burning infested trees, particularly in large spots, is the same for Alternative 1. Cutting a buffer strip is not recommended. To reduce the possiblity of "breakouts", every effort should be made to locate and treat all green infested trees during the piling and burning operation.

Alternative 3. Cut-and-leave infested trees.

This is accomplished by felling a buffer strip and all infested trees toward the center of the spot. The purpose is to stop spot growth. Use of this method causes beetles to disperse at a time of year when this behavior is unnatural. This results in a reduction of mass attacked trees and spot growth ceases. Cut-and-leave should only be used in the summer (May 1 - September 30), since these are the only months beetles are not dispersing. It should only be used on small spots, normally 50 infested trees or less.

Alternative 4. Chemically treat infested trees.

In this method, infested trees are felled toward the center of the spot, cut into workable lengths, and sprayed with lindane or Dursban® 4E. The purpose of this method is to kill the beetle population. To be effective, all bark surfaces must be sprayed. This involves turning the logs which becomes more difficult as tree size increases.

Forest Pest Management, Alexandria Field Office, should be contacted prior to the extensive use of chemical control for an update on latest restrictions or application procedures.

Alternative 5. No action.

SPB populations increase periodically. When they increase, large numbers of susceptible pines are killed. This may occur over one to several years, and then the SPB populations collapse and the corresponding pine mortality subsides. This will continue periodically until transition to a climax forest occurs.

Some cutting will have to be done even if this alternative is selected. Dead trees will begin to decay and eventually fall down. Any dead trees along roadsides or in high-use areas should be felled.

## PREVENTIVE MEASURES

The preceeding discussion, except the No Action alternative, presents only short-term, immediate control strategies. Preventive measures must be taken to help ward off the occurrence of southern pine beetle infestations in noninfested stands. Current preventive measures include:

1. Preventing or minimizing annosus root rot. Annosus root rot weakens trees, predisposing them to beetle attack.

2. Harvesting mature and overmature stands. Such stands are vulnerable to beetle attack and should be harvested as soon as possible after rotation age is reached.

3. Thinning stagnated stands. Overstocked stands are generally low in vigor and are more likely to be attacked. Basal areas in excess of 120 sq. ft/acre should be avoided and these stands should be thinned as heavily as R-8 guidelines allow.

4. Minimizing impact of natural disturbances which cause stand stress. These factors include ice, wind, hail, animal damage, flooding, erosion, poor soil fertility, etc. Corrective measures include: removing individually damaged trees or, in extreme cases, the entire stand; improving drainage; fertilizing; or performing any other treatments which improve stand vigor.

5. Minimizing or eliminating man-caused disturbances. Logging and pipeline or powerline construction require the use of heavy equipment which may cause tree skinning and soil compaction that significantly weakens trees. Efforts to minimize the damage caused by these activities can significantly reduce the possibility of having southern pine beetle problems.

6. Matching species to site. Off-site plantations seldom achieve the vigorous growth necessary to deter attacking beetles. Hardwood sites converted to pine also have the additional stress of hardwood competition.

## PRECAUTIONARY STATEMENT

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in their original containers under lock and key out of reach of children and animals, and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear appropriate protective clothing.

If your hands become contaminated with a pesticide, wash them immediately with soap and water. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove the clothing immediately and wash skin thoroughly. After handling or spraying pesticides, do not eat or drink until you have washed with soap and water.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicide from equipment, do not use the same equipment for insecticides or fungicides that you used for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary landfill dump, or crush and bury them in a level, isolated place.

NOTE: Some states have restrictions on the use of certain pesticides. Check your state and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Environmental Protection Agency, consult your county agent, state extension specialist or FPM to be sure it is still registered for the intended use. For further information or assistance, contact Forest Pest Management, Alexandria Field Office, Pineville, La., 71360, (Telephone: FTS 497-7280, or Commercial 318/473-7280).